STATEMENT OF WORK (SOW)

Preventive maintenance for hot water boiler heating systems at residences

February 16, 2012

1.0 INTRODUCTION

1.1 OVERVIEW: The Facilities Management of the US Embassy Amman is seeking the services of a professional hot water systems maintenance contractor to conduct professional preventive maintenance services for residences outside the compound. The contractor will provide approved professional labor and all required tools, equipment and spare parts to conduct in timely manner and to get the results indicated in this (SOW). The contractor responsibility is to submit his personnel for clearances. Those who do not get the clearance, the contractor should submit replacements. The contractor is to assure best practice services and should be subject to Contract Officer Representative (COR) approvals. Duration of contract is one year. All services within this (SOW) will be conducted twice for each residence or as instructed by the (COR) within the contract period and according to the times and locations specified by (COR). If a system that the contractor conducted the PM on as per this (SOW) failed within three days after finishing his/her works there, the contractor should provide full coverage of attending the systems immediately, resolve and maintain any defects with no extra charges for labor or materials he/she replaced.

1.2 The works as per this (SOW) will be conducted by the contractor twice a year for each residence or as directed by the (COR). The contractor should submit a schedule with timeline to conduct these works after the (COR) approves and under the supervision of embassies representative. Contractor should not attend any residence for any works without previous coordination and approval from the (COR). The contractor should not do any works beyond this (SOW) unless receives written instructions from (COR). The contractor should in timely manner report back to (COR) on any deficiencies in the heating system that he/she either could not correct or beyond this (SOW).

1.3 PROJECT PRACTICE: the main aim of this contract is to conduct thorough preventive maintenance on the system to make sure it is running at it's best performance according to manufacturer's recommendations and that under regular operation will not face any operational problems. The exhaust gases should be measured for CO2 to make sure of complete combustion of fuel. The required maintenance procedures should follow the best accepted and approved by (COR) practices. Spare part, tools and equipment should be as recommended by the maintained equipment manufacturers and should be submitted to the (COR) for approval before conducting the works. The manpower provided should be professional and subject to (COR) approval. The manpower provided should be adequate to perform the required job in shortest possible timeline. Protective materials should be used where needed for the contractor's workers and for the other things or people around. Any damage to any assets including the assets related to others should fall into the contractor's responsibility. He/she should rectify/fix, or as needed and instructed by the (COR), any altered things as a result of his works. The contractor is to take

required measures to assure safety and accessibility of all users. Place of worked should be left clean.

1.4 On each attended PM and, the contractor should replace with approved spare parts and with no extra charge the following parts: the diesel filter, the damaged within boiler room pipes insulation, and burner nozzle should be replace once annually with correct manufacturers size.

2.0 PREVENTIVE MAINTENANCE PROCEDURES:

Systems/equipment fall within this (SOW): The average area of the residences to be maintained is about (230) m^2. Locations are within few kilometers in and around Abdoun area.
All systems and equipment/materials located outside the residences and related to any part of the heating and hot water systems should be maintained:

2.1 Boiler : Semi-Annual works:

2.1.1 Special Instructions:

1. Review manufacturer's instructions.
2. If boiler is part of an operating system, blank the boiler from the rest of the system.
3. De-energize, tag and lock circuits.
4. Account for all tools before closing boiler.

2.1.2 Check Points:

1. Check all automatic air vents and replace damaged or rusted ones.
2. Scrape and clean boiler inside of scale. Dispose debris properly away from residence.
3. Brush chimney connection and clean in and out. Make sure check door is secured closed.
4. Check the burner control box and thermostat. Test the exhaust for correct burning and make the required adjustments in air/fuel ratio and diesel pump pressure. Replace the boilers nozzle with correct size and type as per manufacturer's recommendation if needed.
5. Check and replace worn or damage insulation at boiler or pipes.
6. Check the expansion line and tank and the makeup line. Make sure tank has water and feed line running. Check the diesel filling pipe and make sure no leaks in them. Correct any damage or leak.
7. Drain, washout, and flush boiler (not to be carried out on hot boiler system)
8. Test all valves for open/close positions, repair damaged and make sure they are on correct position (open or close). Valves for the relief valves, expansion line, domestic hot water line and air vents should be kept open after completion of works.

9. Determine if there is any major problems with boiler, cylinder or pumps that require any of them be replaced. Repair if repairable.
10. Check for excessive rust build-up between sections (cast iron type).
11. Examine all water lines to controls to determine that they are clear of scale and arranged to insure proper operations.
12. Tighten packing nuts on valves and pumps. Make sure all pumps working correctly. Repair any damage or leak.
13. Flush strainer baskets and oil solenoid valve seats. Replace diesel filter. Check diesel tank and make sure access door is closed. Make sure there are no leaks, clean the sight glass, repair any leaks, check the burner's flexible connections and repair as needed.
14. Check boiler room for adequate ventilation, remove any blockages.
15. Check all operations of control box, thermostat and valves.
16. Check flue connections for tight joints and minimum resistance to air flow. (See that combustion chamber, flues, breeching, and chimney are clear before firing.)
17. Take CO2 flue gas temperature readings for determination of efficiency of the unit. CO2 for atmospheric gas burners should be 8 to 9.5%. For forced draft burners 9 to 10%. Flue gas temperature should be at 300 to 600 F. Combustion efficiency should be approximately 80%. If efficiency is low, check system and correct.
18. Check burner for flashback and tight shutoff of fuel.
19. Check operation of controls. Clean and adjust if necessary.
20. Satisfactory operation and adjustment should conform to manufacturer's instruction.
21. Check all electrical wiring and make sure they are no loose connections or naked wires.
22. As a whole system, check for system and parts integrity, check and correct: ant leaks, damaged insulation, up normal wiring, up normal combustion, up normal noises, and any other deficiencies.

2.2 Burner

1. Test and inspect burner (with and without firing) for leaks and for proper combustion.
2. Time trial for ignition for pilots and burners should be in accordance with manufacturer's instructions.
3. Check operation of automatic controls and combustion flame safeguards for normal operation. There should be no presence of oil discharge, ignition or flame. Check the photo cell and clean it, replace it if not working properly.
5. Check delivery of fuel in relation to its response to the ignition system. Examine electrodes for carbon buildup, dislocation, distortion, and burning of parts.
6. Ignition transformer to supply dependable arc, adjust and regulate as required for clearance and air gap.

7. If exists; clean and adjust draft regulator and air shutter on a natural draft burner to ensure access air quantities are minimum for complete combustion. Test with flue gas analyzer.
10. Check and clean filters and strainers. Replace the diesel filter.
11. Clean, check operation, and adjust controls and safeties.

2.3 Pumps (heating, domestic hot water). Frequency: Semi-Annual

1. Inspect wear rings, seals, and impeller.
2. Clean strainers.
3. Start and stop pump, noting vibration, pressure and action of check valve.

2.4 Fuel Oil Storage Tanks, filling lines and pipes Frequency: Semi-Annual

1. Examine tank and pipes for leaks, condition of piping connections.
2. Examine, clean, and adjust operation of strainers, traps, control valves, oil flow meter, oil temperature and pressure gauges.
3. Check level sight glass. Clean inside if not visible.

2.5 Disconnects (Isolating Switch; Per Switch) **Frequency: Semi-Annual**

2.5.1 Special Instruction:

2. De-energize, lockout, and tag circuit. Note these switches do not have an interrupting rating and can only be operated after the circuit has been opened by some other means. They should never be operated under load.
3. Obtain and review manufacturer's instructions.

2.5.2 Check Points:

1. Inspect for signs of overheating and loose or broken hardware.
3. Clean main contacts, adjust and put a thin film of conductive lubricant on them if recommended by manufacturer.
5. Check all fuse tubes and renewable elements for corrosion, dirt, and tracking. Clean or replace as required.
6. Clean entire cubicle with vacuum.

3.0 MINIMUM SUGGESTED TOOL

1. Blade and Phillips Head screwdrivers - various sizes
2. Pliers - vise grip (2), slip joint, needle nose, diagonal, cutting pliers, side cutters.
4. Hack Saw and spare blades (minimum 3 ea.)
5. 3/8" drive Socket Set and Racket
6. Small set of Allen Wrenches

8. 5 meter measuring Tape
9. Crescent Wrenches 4" to 8"
10. Open and Box End Wrenches (1/4" to 3/4")
11. File (Bastard Cut)
12. Pipe Wrenches (to 14")
14. Pocket Knife
15. Flashlight.
16. Grease Gun and Oiler
17. Wire Brush, paint brush, and long narrow brushes.
18. Extension Cord w/ Inspection Light.
19. Various Cleaning Tools - brushes, scrapers, etc.
20. Emery Cloth, fine grade.
23. Pocket thermometer
24. Voltmeter – Ohmmeter – Milliammeter.
25. Flaring tool
27. Clamp-on ammeter
29. Crescent wrenches to 14"

4.0 ADMINISTRATION

4.1 POINT OF CONTACT (POC): The Contractor shall appoint a project manager to act on behalf of the Contractor as the POC for all communications between the Contractor and COR.

4.2 CONTRACTING OFFICER'S REPRESENTATIVE (COR): The designated COR for this Task Order is Nabeel AbuRumman the Embassy's Facilities Engineer. All administrative matters, and request for technical clarifications and assistance regarding this Task Order shall be directed to Mr. AbuRumman Telephone 06/5906147, 079/5703311.

4.3 PAYMENTS: An invoices shall be submitted to the COR for each residence after completion of works. Each invoice shall include the contract number and property number.

4.4 TERMINATION: If, for convenience to the Embassy, any phase or task of the delivery order is deemed unfeasible by Embassy, the United States Government may at this point pay the Contractor of this project for the work done to date and terminate the remaining portion of the delivery order.

4.5 The Contractor shall NOT conduct any work that is beyond this Statement of Work (SOW) unless directed in writing by the Contracting Officer (COR). Any work done by the Contractor beyond this SOW without direction from the COR will be at the Contractor's own risk and at no cost to the Government.

The contractor should conduct one or more of all the below repairs, per a call from the FAC representative with a time not to exceed 5 hours from the call time.

The contractor should inspect and provide an estimated work time, price including parts needed and labor cost.

After approval, he should complete the requested work per FAC representative recommendations and supervisions.

The contractor should provide the FAC rep. with a detailed invoice as soon as he approved and except the work done.

Repairs

Will include but not limited to the below.

- All Boiler piping,
  Repairing, replacing, installing any hot water pipes, heating pipes, couplings, valves, flexible hoses, clamps...etc.
- Pumps,
  Repairing, replacing, and installing deferent capacities hot water cylinders, heating circulation pumps with all the needed parts, electrical installations.
- Controls,
  Repairing, replacing, installing boilers control, such as thermostats, temperature gauges, overload, electrical switches, breakers, control box, photo cell, spark plugs, diesel solenoid, Nozzle, filter...etc.
- Repairing, replacing, installing expansion tank, deferent capacities hot water cylinders, boiler suctions, deferent types of burners, Heating radiators, radiator knobs, collectors, branch and main valves, and collector blockers.
- Chimney,
  Repairing, replacing, installing, cleaning, and mounting.
- Leaks,
  Diesel or water leaks in the boiler room or from the hot water system pipes, radiators, couplings, or Knobs, inside the residence .